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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/760,599 | 01/20/2004 | Stephen R. Van Doren | 200313613-1 | 1105 |

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EXAMINER

CHERY, MARDOCHEE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2188

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/760,599 | Applicant(s) VAN DOREN ET AL. | |
| | Examiner Mardochee Chery | Art Unit 2188 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 18 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "retiring an outstanding transaction and retiring a write-back transaction" was not properly defined and described in the specification. As such the specification lacks the manner and process of making and using the invention in such full, clear, concise, and exact terms as to enable anyone of ordinary skill in the art to make and use the same.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7-10, 12-27, and 29-30 rejected under 35 U.S.C. 103(a) as being unpatentable over Cypher (2004/0002992) in view of Rowlands (2003/0217236).

As per claim 1, Cypher discloses a system comprising: a first node that includes an ordering point for data, the first node broadcasting a message to at least one other node in the system in response to an acknowledgement provided by the memory indicating that the ordering point for the data has migrated from the first node to the memory [pars. 7-9, 48, 68, and 75].

However, Cypher does not specifically teach the first node being operative to employ a write-back transaction associated with writing the data back to memory and broadcasting a write back message in response to an acknowledgement as required by the claim.

Rowlands discloses the first node being operative to employ a write-back transaction associated with writing the data back to memory and broadcasting a write back message in response to an acknowledgement [par. 65] to write back a remote cache block that is being evicted from the node (par. 65).

Since the technology for implementing a system with a first node being operative to employ a write-back transaction associated with writing the data back to memory and broadcasting a write back message in response to an acknowledgement was well known as evidenced by Rowlands, an artisan would have been motivated to implement this feature in the system of Cypher in order to write back a remote cache block that is being evicted from the node. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the system of Cypher to include a first node being operative to employ a write-back transaction associated with writing the data back to memory and broadcasting a write back message in response to an acknowledgement because this would have facilitated writing back a remote cache block that is being evicted from the node (par. 65) as taught by Rowlands.

As per claim 2, Rowlands discloses the first node comprises a processor having an associated cache that comprises a plurality of cache lines, one of the plurality of cache lines having an associated state that defines the cache line as a cache ordering point for the data prior to employing the write-back transaction [pars. 62, 65 and 112].

As per claim 3, Rowlands discloses the at least one other node provides a response to the first node acknowledging receipt of the write-back message broadcast by the first node [par. 65].

As per claim 4, Rowlands discloses the first node maintains the write-back

transaction active until the first node receives responses from the at least one other node to the write-back message broadcast by the first node [pars. 65 and 113].

As per claim 5, Rowlands discloses a third node that issues a source broadcast request for the data employing a source broadcast protocol, the third node retrying the source broadcast request for the data in response to recognizing a conflict associated with the source broadcast request for the data [pars. 57 and 113].

As per claim 7, Cypher discloses the third node retries the source broadcast request employing a forward progress protocol [par. 7].

As per claim 8, Rowlands discloses the first node further comprises a request engine having an associated miss address file, the request engine allocating an entry in the miss address file associated with the write-back transaction for the data that is maintained in the miss address file until responses have been received from all other nodes in the system to the write-back message broadcast by the first node [par. 65].

As per claim 9, the rationale in the rejection of claims 1 and 2 is herein incorporated.

As per claim 10, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 12, the rationale in the rejection of claim 7 is herein incorporated.

As per claim 13, the rationale in the rejection of claim 8 is herein incorporated.

As per claim 14, Rowlands discloses the first processor comprises a cache line that contains the desired data in a state that defines the cache line as the ordering point for the desired data prior to issuing the write-back request to the memory [par. 88].

As per claim 15, Rowlands discloses the state that defines the cache line as the ordering point for the desired data is selected from a group consisting of a modified state, an owner state and a dirty state, the cache line transitioning to an invalid state after issuing the write-back request to the memory [par. 88].

As per claim 16, the rationale in the rejection of claim 1 is herein incorporated.

As per claim 17, the rationale in the rejection of claim 2 is herein incorporated.

As per claim 18, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 19, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 20, the rationale in the rejection of claim 2 is herein incorporated.

As per claim 21, the rationale in the rejection of claim 15 is herein incorporated.

As per claim 22, the rationale in the rejection of claim 15 is herein incorporated.

As per claim 23, the rationale in the rejection of claim 1 is herein incorporated.

As per claim 24, the rationale in the rejection of claim 3 is herein incorporated.

As per claims 25 and 26, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 27, the rationale in the rejection of claim 5 is herein incorporated.

As per claim 29, the rationale in the rejection of claim 2 is herein incorporated.

As per claim 30, the rationale in the rejection of claim 15 is herein incorporated.

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5. Claims 6, 11, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cypher (2004/0002992) in view of Rowlands (2003/0217236) and further in view of Rowlands (2005/0251631).

As per claim 6, Cypher and Rowlands disclose the claimed invention as discussed above in the previous paragraphs. However, Cypher and Rowlands do not specifically teach the conflict is recognized by the third node in response to one of (i) receiving the write-back message broadcast by the first node while the source-broadcast request for the data is active at the third node, or (ii) receiving a conflict response from the first node to the source broadcast request issued by the third node as required by the claim.

Rowlands (631) discloses the conflict is recognized by the third node in response to one of (i) receiving the write-back message broadcast by the first node while the source-broadcast request for the data is active at the third node, or (ii) receiving a conflict response from the first node to the source broadcast request issued by the third node [pars. 10, 72, 79 and 80] to avoid having agents conflicting with one another for resources (par. 10).

Since the technology for implementing a system with the conflict being recognized by the third node in response to one of (i) receiving the write-back message broadcast by the first node while the source-broadcast request for the data is active at

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the third node, or (ii) receiving a conflict response from the first node to the source broadcast request issued by the third node was well known as evidenced by Rowlands (631), an artisan would have been motivated to implement this feature in the system of Cypher and Rowlands in order to avoid having agents conflicting with one another for resources. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention by Applicant to modify the system of Cypher and Rowlands to include the conflict is recognized by the third node in response to one of (i) receiving the write-back message broadcast by the first node while the source-broadcast request for the data is active at the third node, or (ii) receiving a conflict response from the first node to the source broadcast request issued by the third node since this would have helped with avoiding agents conflicting with one another for resources (par. 10) as taught by Rowlands (631).

As per claims 11 and 28, the rationale in the rejection of claim 6 is herein incorporated.

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Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mardochee Chery whose telephone number is (571) 272-4246. The examiner can normally be reached on 8:30A-5:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manonama Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

March 31, 2006



Mardochee Chery
Examiner
AU 2188



MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER
4/3/06